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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/550,505	04/17/2000	Donald C.D. Chang	PD-990185	1446

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HUGHES ELECTRONICS CORPORATION
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EXAMINER

RICHEY, JAMES J

ART UNIT	PAPER NUMBER
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2663

DATE MAILED: 11/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/550,505

Applicant(s)

CHANG ET AL.

Examiner

James J. Richey

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04/17/2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 April 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4-5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description:

Figure 1, item 10.

Figure 9, item 900.

A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to because Figure 1 makes reference to item 102 twice, but with a different pointer for each number. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. Claims 1, 5, 8, & 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dunn, Patent Number 3,742,498, in view of Gilhousen, Patent Number 4,901,307.

Regarding Claims 1, 5, 8, & 12: Figure 1 in Dunn shows a Master Ground Station (gateway) 40, in radio communication with satellites 42 & 43, and mobile aircraft 41 & 41N. In order to synchronize communication, the Master Ground Station transmits a "master reference sync burst" through said satellites to said aircraft (col. 5, lines 48-51). The aircraft then send a return signal through the satellites to the master station (col. 5, lines 51-58). Both timing and phase differences are then measured by the ground station and corresponding signals are adjusted to ensure proper synchronization between ground station and aircraft (col. 5, lines 59-67; col. 6, lines 1-13).

Dunn's invention utilizes TDM radio communication, rather than CDMA, as discussed in the application. Dunn's invention mainly concerns communication with aircraft, but does state that the invention could be used in "any TDM multiple access system" (col. 5, lines 26-33). Finally, Dunn does not specifically state that the multiple satellites used would send the signals to the aircraft such that they would arrive in the same phase with each other.

Figure 2 in Gilhousen discloses a CDMA communication system that is comprised of satellites 14a & 14b, in communication with mobile subscribers 20 & 22, as well as one or more central stations (gateways) 16a & 16b. The signals emanating from the central station are adjusted in both phase and time and sent to the satellites. As a result of this altering, the signals received by the mobile user occur in phase with one another and form a constructive interference pattern (col. 19, lines 44-68; col. 20, lines 1-17). In addition, Figure 8 in Gilhousen demonstrates how a user receives significantly

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more gain while located at an in-phase location than an unintended user, which would receive almost no gain, resulting from phase interference (col. 19, lines 53-67).

By combining the signal timing means described in Dunn with the CDMA invention of Gilhousen, the result would be that of the current application. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Dunn's TDM satellite system with that of Gilhousen's CDMA system in order to decrease the complexity and cost, as well as create a greater number of available connections in the communication system (col. 4, lines 37-54 in Gilhousen).

5. Claims 2-4 & 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dunn, Patent Number 3,742,498, in view of Gilhousen, Patent Number 4,901,307, as applied to claims 1, 5, 8, & 12 above, in further view of Dunn, Patent Number 3,593,138.

Regarding Claims 2-4 & 9-11: Figure 4 in Dunn (Patent Number 3,742,498) discloses transmit clock phase locked loop 60, as well as receive timer 45 and transmit timer 46, which are used in conjunction with the phase comparator and satellite to aircraft range indicator 52, to find the phase shift of the return sync burst signal (col. 5, lines 47-63; col. 10, lines 26-67). In addition, Dunn states that from the phase difference calculations, timing synchronization is also found (col. 5, lines 64-67). Thus, it is inherent in Dunn's invention that the time shift of the return signal is also found as a result of the phase shift measurement.

While Dunn's invention describes how both time and phase changes are found, it does not go into great detail about how the frequency changes or Doppler shift is accounted for.

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Figure 1 in Dunn (Patent Number 3,593,138) discloses a master station 11 in communication with repeater 12 and multiple slave stations 1-10. In order to synchronize the signal between master and slave stations, Doppler shift is measured between the ground station and repeater, as well as the slave station and repeater. This is done through the use of a sync burst signal (col.3, lines 34-42; col. 4, lines 36-67).

By combining the use of the partial Doppler correction mentioned in Dunn (Patent Number 3,593,138) and the use of round trip adjustment in the sync burst for both phase and time shifts mentioned in Dunn (Patent Number 3,742,498), the result would be that of the current application. It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine these properties in order to reduce the complexity of the circuitry associated with the mobile user (slave station) and to centralize all calculations and adjustments within the master ground station.

6. Claims 6 & 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dunn, Patent Number 3,742,498, in view of Gilhousen, Patent Number 4,901,307, as applied to claims 1, 5, 8, & 12 above, in further view of Witsaman, Patent Number 5,416,808.

Regarding Claims 6 & 7: As described above, Dunn and Gilhousen collectively describe a CDMA communication system that consists of a ranging signal sent from a master ground station, through various repeater satellites, and received by a mobile user, that, upon its return at the master station, is analyzed for shifts in both phase and time. This signal additionally takes into account the movement of the satellites relative to both the ground station and mobile user, as well as the phase, timing, and frequency changes

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that result, and properly synchronizes its return signals to account for said discrepancies (col. 5, lines 48-67; col. 6, lines 1-58). Additionally, from the phase/timing information calculation, the ground station sends signals to the mobile user that enable adjustment of the transmit timer within each user to synchronize with both satellites and ground station (col. 6, lines 5-13). As a result from these changes, the signals between ground station and mobile users will arrive in phase with one another.

While Dunn and Gilhousen correctly set up a synchronous signal between mobile user and ground station, they fail to make specific mention of altering the local reference clock to each mobile user as part of the synchronization process. Figures 1 & 2 in Witsaman disclose a simulcast network that consists of a paging system controller (23) in communication with satellite (56) and multiple paging stations (24). In addition, a maintenance operation point exists (46) that is internal to the system controller. According to Witsaman's invention, paging system controller informs the multiple paging stations to send out a time information command. This command, once sent by the stations and received at the system controller, is analyzed by the maintenance operation point and time calculations between when the stations received the transmit signal and when the signal arrived at the controller are made. Path delay is additionally taken into consideration and a time difference factor between the clock of the controller and those of the paging stations is found. This difference signal is sent to the paging stations and their internal clocks are adjusted so as to coincide with that of the system controller (col. 14, lines 16-60).

By combining Dunn/Gilhousen's CDMA communication system with the clock synchronizer described in Witsaman, the result would be that of the current invention. It

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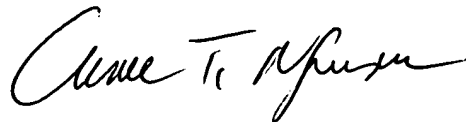
would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the system time synchronizer within a CDMA communication system so as to further coordinate the reception of signals between a gateway and mobile user. By coordinating the clocks, phase synchronization is greatly aided and overall improvement in communication quality results.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James J. Richey whose telephone number is (703) 305-4682. The examiner can normally be reached on M-F: 8:30am-6pm, Alternate Fridays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chau T. Nguyen can be reached on (703) 308-5340. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

JR
JR



CHAU NGUYEN
SUPERVISORY PATENT EXAMINER
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